

MEDIANOVO - A Media Database for Medical Education, Research and Health Care

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Background and Purpose

MEDIANOVO provides a high quality, scientifically indexed multi-media database with comfortable authoring and download functions through a web-based frontend. Metadata are provided for all media, comprising clinical descriptions as well as keywords derived from standardized vocabularies (MeSH¹, ICD^{2,3}). Media retrieval is facilitated by a combination of concept and text based search functions, including hierarchical retrieval and synonyms. A sophisticated architecture for assessing and managing rights assures the intellectual property rights of the media authors and access for particular user groups. Comfortable functions lead the media authors through a workflow for uploading, indexing, searching and downloading single or grouped media. Currently, MEDIANOVO is mainly used by lecturers in medicine as a repository for storing and sharing media for educational purposes. However, it is a database which can also serve for training and further education, in computer based learning systems, for individual patient information, as well as for medical publishing.

System Description

The MEDIANOVO database is based on Microsoft IIS 5.0[®] and Microsoft-SQL-Server 2000[®] using ASP (Active Server Pages) technology and Com+ components for business logic.

A basic system component is the “user manager”. It allows for allocation of access rights for the media management. MEDIANOVO generally distinguishes between two user groups, which both have to pass a registration. Firstly, there are ‘users’ who can use the database for retrieval only. Secondly, there are ‘authors’, who can update the database and administrate their own media. Based on these elementary user groups, abstract user groups like institutions can be set up within the “user manager”.

The “media manager” in MEDIANOVO can cope with a great variety of digital media formats. This includes the major imaging formats, several digital video formats, PDF files, text files, 3D objects (SPX-format), audio files and DICOM⁴ files.

To guarantee a constantly high quality level of media materials, a specific work-flow-logic for

‘authors’ has been implemented. After uploading files onto the server the author creates a media group, which may contain several, textually related and linked media assigned the metadata. A media group always has to have a MeSH code within the describing title. Optionally the media group can be annotated to additional MeSH or ICD-10 codices as subtitles. The indexing system is based on a thesaurus integrating MeSH, ICD-10 and UMLS⁵. Public and private text fields are additionally provided. Every indexed media group is checked for technical quality, textual correctness and protection of privacy rights before becoming available for other ‘authors’ and ‘users’.

In the retrieval part of MEDIANOVO media can be retrieved by freetext entry and keyword searching as well as through an alphabetically ordered MeSH-Mainheading list.

A specific API (Application Interface) of MEDIANOVO allows the integration of media into other web applications via hyperlinks.

Progress and Results

At present, the MEDIANOVO database consists of more than 6,000 images, videos, audio and DICOM files. All media are issued with copyright symbols as well as visual and transparent digital watermarks before downloading. All pictures can be transformed and issued in several image formats. Media can be collected in presentation folders to be downloaded in bulk or as a ZIP-Archive. MEDIANOVO is the medical media repository used by various German universities, as well as the CASEPORT-Project⁶. By the end of 2003 the system will also be available for international use.

The MEDIANOVO project is supported by the Ministry of Science, Research and Arts of the State of Baden-Württemberg, Germany.

References

- [1] MeSH – Medical Subject Headings. <http://www.nlm.nih.gov>
- [2] ICD-10 – International Statistical Classification of Diseases. <http://www.who.int>
- [3] DIMDI – German Institute of Medical Documentation and Information. <http://www.dimdi.de>
- [4] DICOM – Standard. <http://www.nema.org>
- [5] UMLS - Unified Medical Language System. <http://www.nlm.nih.gov>
- [6] CasePort – Portal für die fallbasierte Lehre in der Medizin. <http://www.caseport.de>